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Indian Standard

SPECIFICATION FOR MARINE GUARDRAILS AND STANCHIONS

PART II GATES AND PORTABLE GUARDRAIL SECTIONS FOR SHIPS

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Indian Standard
SPECIFICATION FOR MARINE GUARDRAILS AND STANCHIONS
PART II GATES AND PORTABLE GUARDRAIL SECTIONS FOR SHIPS

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Indian Standard
SPECIFICATION FOR MARINE GUARDRAILS AND STANCHIONS

PART II GATES AND PORTABLE GUARDRAIL SECTIONS FOR SHIPS

0. FOREWORD

0.1 This Indian Standard (Part II) was adopted by the Indian Standards Institution on 29 February 1980, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 This standard specifies requirements for marine guardrails and stanchions for cargo ships to comply with the regulations of the International Convention on Loadlines 1966, Chapter II, Regulations 25, Parts 2 and 3.

0.3 Users of this standard should note that while observing the requirements of the standard, they should at the same time ensure compliance with such statutory requirements, rules and regulations as may be applicable to the individual ship concerned.

0.4 This standard is being issued in three parts. Other parts in the series are:

a) Part I Guardrails for merchant ships; and
b) Part III Storm rails (exterior).

0.5 In the preparation of this standard, assistance has been drawn from BSMA 40 (Part II) - 1975 Marine guardrails, stanchions, etc : Part II Gates and portable guardrail sections for merchant ships (excluding passenger ships), issued by the British Standards Institution (BSI).

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part II) specifies dimensions, materials, workmanship for gates and portable guardrail sections which are fitted in line of guard-

---

*Rules for rounding off numerical values (*revised*).

rails to provide access to lifeboats and accommodation ladders as well as permitting gangways to be laid from the dockside into the ship's deck.

2. TERMINOLOGY

2.0 For the purposes of this standard, the following definitions shall apply.

2.1 Guardrail — A construction comprising stanchions, rails, toprails and stays.

2.2 Stanchions — The principal vertical structural members of guardrail system.

2.3 Toprail — The uppermost rail in a series of rails (may be wood, steel or other suitable materials, for example, PVC).

2.4 Stay — A secondary structural support attached to stanchions and deck.

3. MATERIALS

3.1 The materials to be used for the manufacture of individual components shall be as shown in Table 1.

4. DESIGN, CONSTRUCTION AND INSTALLATION

4.1 Principal Dimensions

4.1.1 The toprail shall be in line with the toprail of the guardrail into which the gate or portable section is inserted and shall be a minimum of 1 000 mm above the deck.

4.1.2 The opening below the lowest course of rails in the gate or portable section shall be a maximum of 230 mm measured from the underside of the rail to the deck or waterway bar where fitted (*see* Fig. 1).

4.1.3 All rails shall be in line with the rails of the guardrail into which the gate or portable section is inserted; the openings between the upper courses shall be a maximum of 380 mm.

4.1.4 The minimum clear distance between fixed stanchions at gate positions shall be 1 350 mm (*see* Fig. 1).

4.1.5 Gates and portable guardrail sections shall be constructed in accordance with Fig. 1 to 7.

4.2 Gates

4.2.1 Gates shall be hinged so that they swing inboard 180° and in the closed position shall be secured in the line of fixed guardrails by pins and lugs (*see* Fig. 1).

4.2.2 When the gate is in the open position it shall be secured by a locking pin to a lug welded to the toprail of the fixed guardrails (*see* Fig. 7).

TABLE 1 COMPONENTS AND MATERIALS OF GATES AND PORTABLE GUARDRAIL SECTIONS

(*Clause* 3.1)

SL No.	COMPONENT	MATERIAL	RELEVANT IS : No.	REMARKS
i)	Stanchions	Mild Steel	IS : 2062-1969†	St42W
ii)	Stays	Mild Steel	IS : 2062-1969†	St42W
iii)	a) Toprail, tube	Steel	IS : 1239 (Part I) - 1979‡	Nominal size 32, medium quality (*see* **4.5**)
	b) Toprail, wood	Teak or other suitable hardwood	—	*See* **4.5.2**
iv)	Rails	Steel	IS : 2062-1969†	St42W
v)	Bolts*	Steel	IS : 1363-1967§	M16
vi)	Nuts (self-locking)*	Steel	IS : 7002-1973‖	M16
vii)	Washers*	Steel	IS : 2016-1967¶	Form E, M16
viii)	Ancillary fittings	Steel	IS : 2062-1969†	St42W
ix)	Quick release pin*	Steel	—	
x)	Securing chain	Steel	—	
xi)	Angle stops	Steel	IS : 2062-1969†	St42W
xii)	Hinge and locking pins*	Steel	IS : 2062-1969†	St42W
xiii)	Split cotter pin*	Low carbon steel	IS : 549-1974**	6·3 mm nominal diameter

NOTE — Shipbuilding quality steel conforming to IS : 3039-1965†† may be used in place of IS : 2062-1969†.

*Recommended to be galvanized.

†Specification for structural steel (fusion welding quality) (*first revision*).

‡Specification for mild steel tubes, tubulars and other wrought steel fittings: Part I Mild steel tubes (*third revision*).

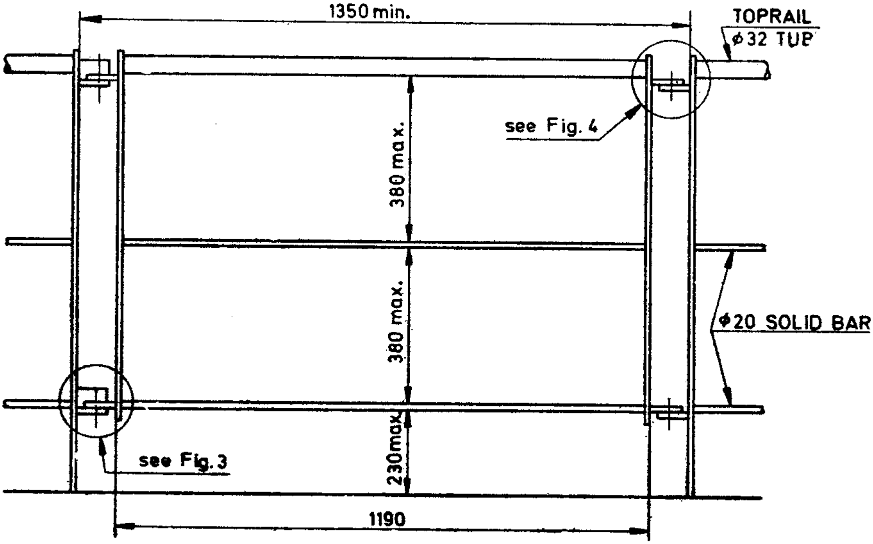
§Specification for black hexagon bolts, nuts and lock nuts (diameter 6 to 39 mm) and black hexagon screws (diameter 6 to 24 mm) (*first revision*).

‖Mechanical performance requirements of prevailing torque type steel hexagon lock nuts.

¶Specification for plain washers (*first revision*).

**Specification for split pins (*second revision*).

††Specification for structural steel (shipbuilding quality).



All dimensions in millimetres.

FIG. 1 GUARDRAIL GATE

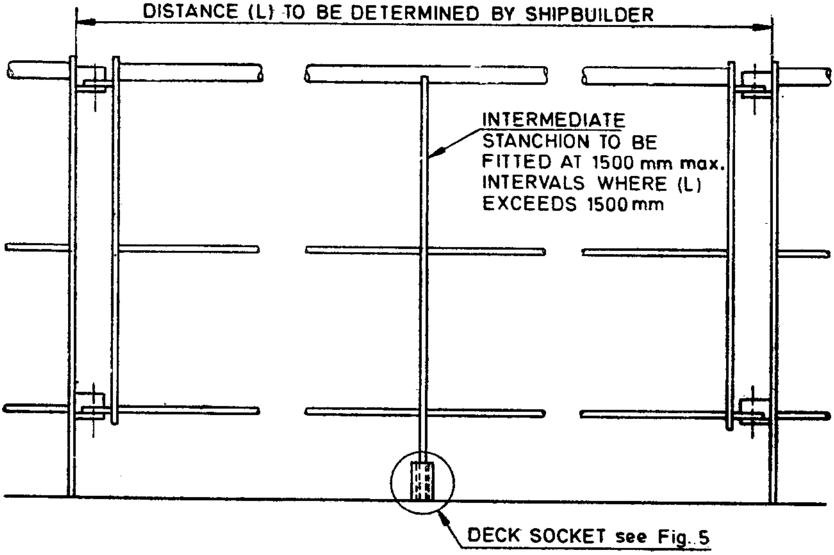
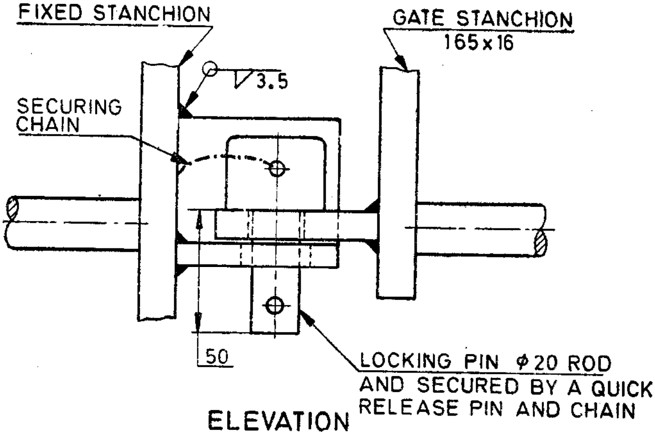
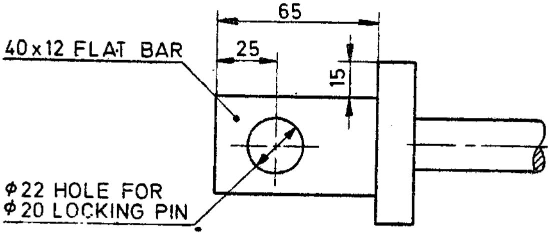

DISTANCE (L) TO BE DETERMINED BY SHIPBUILDER
INTERMEDIATE STANCHION TO BE FITTED AT 1500 mm max. INTERVALS WHERE (L) EXCEEDS 1500 mm
DECK SOCKET see Fig. 5

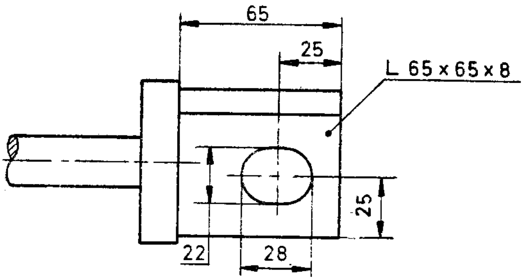
FIG. 2 PORTABLE GUARDRAIL SECTION


FIXED STANCHION
GATE STANCHION 165x16
3.5
SECURING CHAIN
50
LOCKING PIN ϕ20 ROD AND SECURED BY A QUICK RELEASE PIN AND CHAIN

ELEVATION

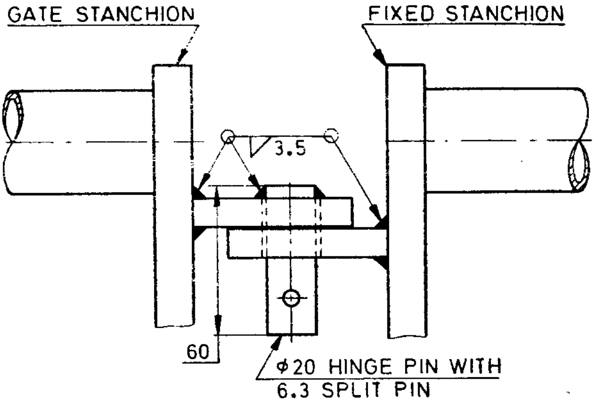


TOP LUG

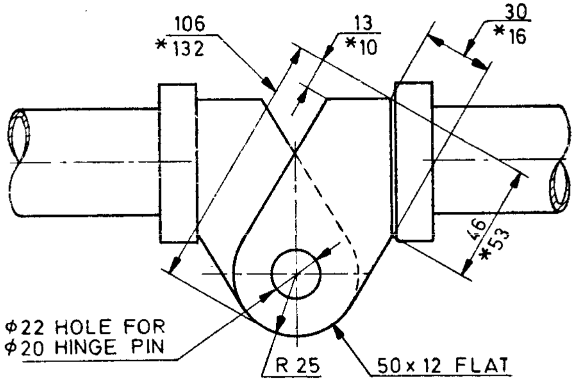


All dimensions in millimetres.

FIG. 3 SECURING LUGS FOR GATES AND RAIL



ELEVATION

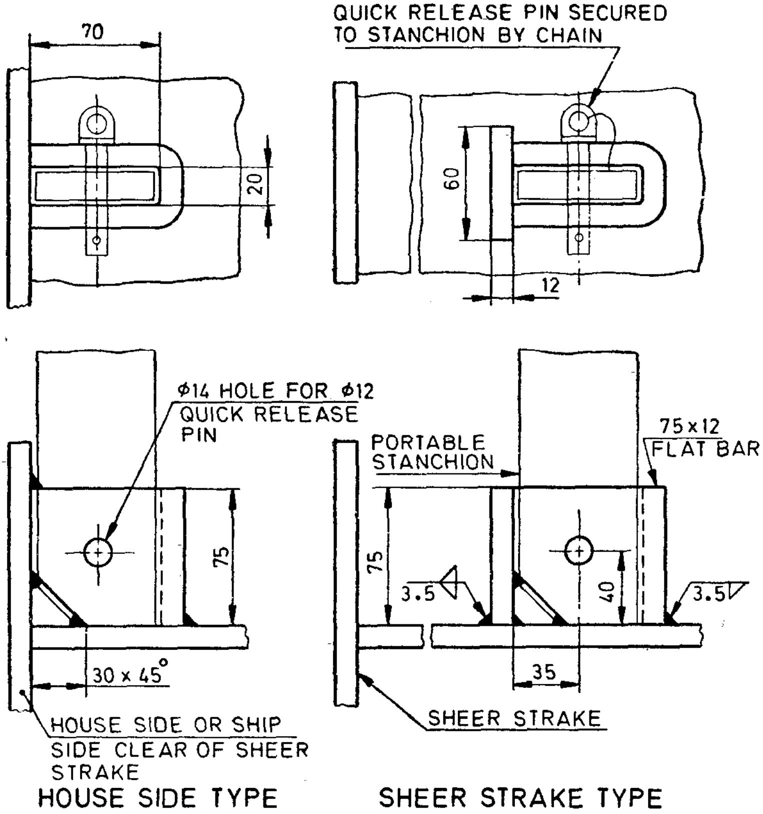


HINGE PLATE FOR STEEL TOPRAIL

NOTE — Where wooden toprail is fitted, additional clearance is provided by using dimensions marked with '*'.

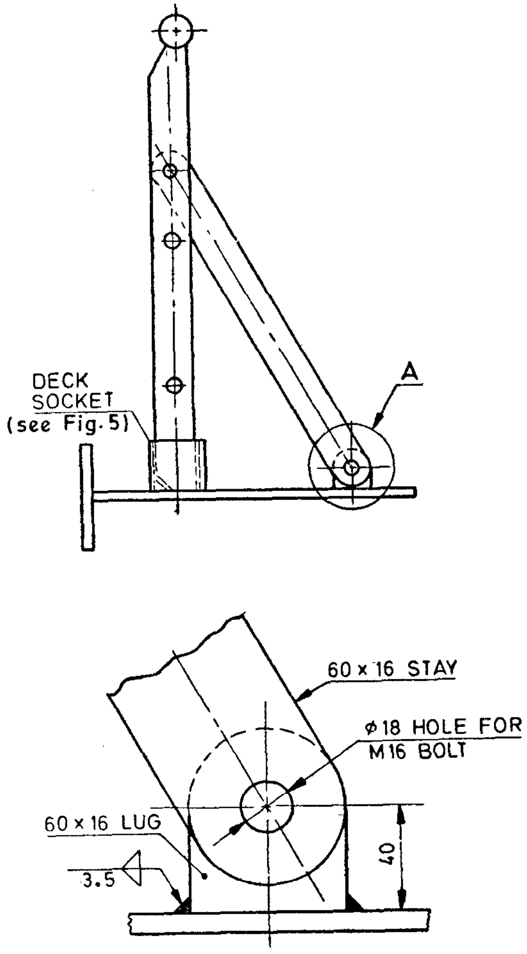
All dimensions in millimetres.

FIG. 4 HINGES FOR GATES


70
20
QUICK RELEASE PIN SECURED TO STANCHION BY CHAIN
60
12
Φ14 HOLE FOR Φ12 QUICK RELEASE PIN
75
30 x 45°
HOUSE SIDE OR SHIP SIDE CLEAR OF SHEER STRAKE
HOUSE SIDE TYPE
PORTABLE STANCHION
75 x 12 FLAT BAR
75
3.5
40
3.5
35
SHEER STRAKE
SHEER STRAKE TYPE

All dimensions in millimetres.

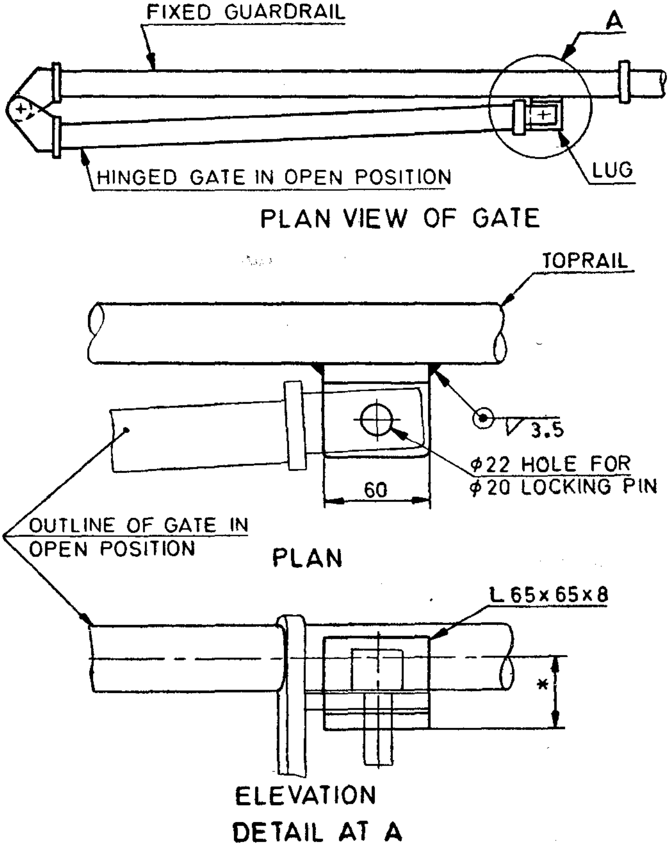
FIG. 5 DECK SOCKETS FOR PORTABLE STANCHIONS



DETAIL AT A

All dimensions in millimetres.

FIG. 6 DETAILS OF STAYS FOR PORTABLE RAIL SECTIONS



*Dimension to be determined at ship with gate in open position.

All dimensions in millimetres.

FIG. 7 LUG FOR GATE IN OPEN POSITION (STEEL TOPRAIL)

4.2.3 End stanchions of adjacent fixed guardrails shall be stayed at the securing side. The fixed stanchion at the hinged side shall not be stayed allowing the gate to open fully through 180°.

4.3 Portable Guardrail Sections

4.3.1 The length of portable sections shall be determined to satisfy shipboard requirements. Where this length exceeds 1 500 mm, a stanchion shall be fitted at mid-length to be located in a deck socket (*see* Fig. 2). Where necessary due to the length of the portable section, similar stanchions shall be spaced at intervals of not more than 1 500 mm.

4.3.2 End stanchions of adjacent fixed guardrails shall be stayed.

4.4 Stanchions — Stanchions for gates and portable sections shall be cut from 60 × 16 mm steel bar or flat bar having section modulus at least equal to that of 60 × 16 mm bar.

4.5 Rails

4.5.1 Toprails shall be cut from 32 mm tube in accordance with IS : 1239 (Part I) - 1979* and welded to the stanchions.

4.5.2 Where wooden toprails are required, they shall be made from quality teakwood, free from defects such as wane, splits or checks. Other hardwoods or acceptable materials may be used, provided that they are at least as suitable in all respects and are equally acceptable to the purchaser.

4.5.3 Lower rails shall be cut from 20 mm diameter solid round steel bar. The rail shall be passed through intermediate stanchions. Rails shall not penetrate end stanchions.

4.5.4 Length of rail shall be continuous and shall be welded or joined only in way of stanchions.

4.6 Stays — Stays shall be cut from 60 × 16 mm flat bar or of flat bar having a section modulus at least equal to that of 60 × 16 mm flat bar and bolted to deck lugs as shown in Fig. 6. The stays shall be either bolted or welded to stanchions at about mid-height, and under an angle of approximately 30°. Where required they shall be attached to alternate stanchions.

4.7 Ancillary Fittings

4.7.1 Hinges and lugs for securing gates and portable guardrail sections shall be fabricated from flat bar and angle conforming to IS : 2062-1969†.

4.7.2 Quick release pins and locking pins for securing the gates and portable sections in their closed positions shall be attached by a chain at a point on the fixed guardrails adjacent to the lugs.

5. WORKMANSHIP AND FINISH

5.1 The construction of the gates and portable guardrail sections shall be straight with a minimum of distortion.

---

*Specification for mild steel tubes, tubulars and other wrought steel fittings: Part I Mild steel tubes (*third revision*).

†Specification for structural steel (fusion welding quality) (*first revision*).

5.2 Gates and portable sections shall be erected to continue the line of the guardrail into which they are inserted.

5.3 Guardrails and stanchions shall be free from defects and imperfections liable to cause injury to persons using them.

5.4 The rails, stanchions and stays shall be given protective finishes appropriate to their shipboard location. Galvanizing, where specified, shall be carried out in accordance with IS : 4759-1968*.

5.5 The welding symbols used in the figures are in accordance with IS : 813-1961†.

6. INSPECTION

6.1 The gates and portable guardrail sections shall be subjected to visual inspection for freedom from defects and imperfections (*see* **5.1** and **5.3**).

---

*Specification for hot-dip zinc coatings on structural steel and other allied products.

†Scheme of symbols for welding.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N = 1 kg. m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2